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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/052,738 | 01/23/2002 | Eiji Sato | 10517/115 | 3279 |
| 23838 | 7590 | 09/02/2003 | | EXAMINER |
| KENYON & KENYON 1500 K STREET, N.W., SUITE 700 WASHINGTON, DC 20005 | | | FLETCHER, MARLON T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2837 | |

DATE MAILED: 09/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-------------------------------|------------------|
| Office Action Summary | Application N . | Applicant(s) |
| | 10/052,738 | SATO ET AL. |
| | Examiner Marlon T Fletcher | Art Unit 2837 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.

- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.

- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.

- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 23 January 2002.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-13 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Claim Objections***

1. Claim 2 is objected to because of the following informalities: In claim 2, the line "vd is a q axis" should be changed to "vq is a q axis". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2 recites the limitation "said non-interference" in lines 15 and 16. There is insufficient antecedent basis for this limitation in the claim.

4. Claim 11 recites the limitation "said non-interference" in lines 16 and 17. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 5, 9, and 10, are rejected under 35 U.S.C. 102(e) as being anticipated by Kondou et al. (6,377,017).

As recited in claims 1 and 10, Kondou et al. disclose a driver circuit for driving a permanent-magnet electric motor, comprising: an inverter (13) for generating an electric current to be

applied to the permanent magnet motor, according to a commanded voltage value applied thereto; a motor-drive-current detector (16, 17) operable to detect the drive current of the motor; a current detector operable to detect a d-axis current and a q-axis current which are respectively an exciting current component and a torque current component of the detected drive current (column 5, lines 33-45); and a controller operable to calculate a d-axis current difference between the detected d-axis current and a commanded d-axis current value, and a q-axis current difference between the detected q-axis current and a commanded q-axis current value, said controller being further operable to calculate a d-axis difference signal which is a function of a d-axis input voltage of the motor and is not a function of a q-axis input voltage of the motor, and a q-axis difference signal which is a function of the q-axis input voltage and is not a function of the d-axis input voltage, said controller controlling said inverter on the basis of the calculated d-axis and q-axis difference signals, such that the d-axis and q-axis difference signals are zeroed (column 5, line 46 through column 6, line 10). Kondou et al. (as recited in claims 5 and 9) further, disclose a current-difference calculator (41)operable to calculate a d-axis current difference between the detected d-axis current and a commanded d-axis current value, and a q-axis current difference (42) between the detected q-axis current and a commanded q-axis current value; a non-interference processor (43) operable to calculate a d-axis difference signal which is a function of a d-axis input voltage of the motor and is not a function of a q axis input voltage of the motor, and a q-axis difference signal which is a function of the q-axis input voltage and is not a function of the d-axis input voltage; and an inverter controller (46, 47) operable to control said inverter on the basis of the calculated d-axis and q-axis difference signals, such that the d-axis and q-axis difference signals are zeroed (column 7, line 55 through column 8, line 20).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 7, and 12, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondou et al. in view of Sakamoto et al. (6,396,229).

As recited in claims 3, 7, and 12, Kondou et al. disclose a driver circuit, wherein said controller is operable for calculating said d-axis difference signal and said q-axis difference signal based on phase, said controller controlling said inverter on the basis of the calculated d-axis and q-axis difference signals, such that the d-axis and q-axis difference signals are zeroed (column 5, line 66 through column 6, line 10).

Kondou et al. do not mention calculating the difference signals in a low frequency range.

However, Sakamoto et al. disclose a driver circuit, wherein said controller is operable for calculating said d-axis difference signal and said q-axis difference signal in a low frequency range (column 16, lines 32-61; and column 19, line 53 through column 20, line 15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the teachings of Sakamoto et al. with the apparatus of Kondou et al., the combination provides accuracy by controlling the system on the basis of the phase and frequency.

Allowable Subject Matter

5. Claims 2, 4, 6, 8, 11, and 13, are allowed.

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6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are related to the present invention relating to the d and q coordinate system.

Asano et al. (5,038,092)

Iwaji et al. (6,531,843)

Ishikawa et al. (5,969,500)

Richardson et al. (5,585,708)

Kaitani et al. (6,344,725)

Kim (5,463,301)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marlon T Fletcher whose telephone number is 703-308-0848. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on 703-308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Marlon T Fletcher
Primary Examiner
Art Unit 2837

MTF
August 24, 2003